# SMS/MMS FoxBox - User Manual

{jfalternative}27|content|There are no translations available{/jfalternative}
When you encounter this symbol, it means that there is an example on our website (available at: www.smsfoxbox.it).

USER GUIDE SMS/MMS FoxBox G20 Version 3.2
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1. IntroductionSMS/MMS FoxBox G20 is a compact and low cost solution to send and receive SMS or MMS messages using a common SIM card. It includes a GSM quad-band modem, a microSD memory card to store the messages (up to 2 millions with the default 2GB card) and a Debian Unix system to manage the SMS and MMS queues through an easy to use Web interface (from now on called GUI).

FoxBox can also operate as an SMS to TCP/IP gateway, integrating a wide range of network and desktop applications with the SMS messaging, as a monitoring system, … (for more details please refer to the website).

1.1 HOW TO CONNECT TO FOXBOX G20

SMS/MMS FoxBox G20 is fully Web based. This means that you can use a Web browser (capable of XSL transformations) to interact with it. Supported browsers are:

• Mozilla Firefox
• Netscape
• Opera
• Internet Explorer 6
• Google Chrome

For a better experience we suggest you Mozilla Firefox (version 3.6x or newer).
The default IP address is “192.168.0.98”. Typing it on the address bar of the browser takes you to the GUI access page, where you can log in with:

- username: admin
- password: admin The system is case-sensitive, so it checks capital letters. Be sure to write the credentials in the right way.

Another possibility is the TTY (serial) or SSH access, which allows you to browse into the internal structure of the device. The account in this case is:

- username: root
- password: foxboxg20

2. Control Functions

2.1 CONTROL PANEL

From this window you can control the status and get access to the core of the system. A set of utilities for diagnostic is available on the bottom of the page. The console is organized in two frames:

2.1.1 STATUS

SMS engine: Used to control the SMS engine, the daemon which materially handles SMS and MMS, giving to the system the power of “send messages” and “receive messages”. This is obviously enabled by default. Please note that stopping the engine will immediately hang the machine, so all processes of sending and receiving will be halted. Clicking on the name you will access its configuration page. Remember that every setting changed on this configuration requires a restart of the engine to take effect.
SMS gateway: Controls the email to SMS gateway engine (using Procmail and Fetchmail). Clicking on the name you will access its configuration page. Also here you need to restart in order to load the changes.
Modem: Automatically starts and stops the GSM/GPRS internal modem. Moreover from this menu you can send AT commands to the internal modem and view its output. This is really useful for country code settings and internal configurations. You can also start a voice call with ATDXXXPHONE where XXXPHONE is the number you like to DIAL.
Buzzer: Possibility to have an acoustic beep on incoming messages.
Signal quality: This is the air carrier signal indicator. It can be in one of these four positions:

- No signal: please check the link and position of your antenna.
- Low: if possible, move your GSM antenna in a better position.
- Good: the antenna is in a good position and the box operations are normal.
- Very Good: the availability of the network is excellent. This means that there is a very low loss-rate on transmissions and these will result faster. On the latest FoxBox version you can see an indicator on the top-left corner of the LCD screen (Ref. 6: LCD screen).

MMS configuration: Used to setup the MMS configuration of the air carrier, so that the device will be able to correctly connect and download the multimedia messages.

2.1.2 UTILITIES

Blacklist/Whitelist: Into blacklist you can find banned phone numbers, for which sendings are disabled. All numbers in this list should be entered followed by a carriage return in order to be correctly parsed. To enable this feature you just have to remove the sharp symbol # from the line “#blacklist=/mnt/flash/…” in the SMS engine configuration.

Whitelist instead gives you the ability to allow sendings only to numbers specified in this list. To enable this feature you have to remove the sharp symbol # from the line “#whitelist=/mnt/flash/…” in the SMS engine configuration.

Note that an SMS engine restart is needed only when you enable the feature, while every changing in lists will be loaded in realtime (Rif. 5.3: How to enable Black/White lists).

Backup/Restore: This utility was designed to allow you to backup the whole content of the appliance (DB and Configuration) in a compressed format. The restore process will push all contents to their original locations. This allows an easy settings migration from a device to another.

# 3. Messages Management

## 3.1 INBOX

In this page are listed all the messages from the current user's incoming queue (Rif. 4.1 Users management).
Each SMS is indexed by the system for easy search capabilities, and has these fields:

- From: the sender;
- From_SMSC: the Short Message Service Center (SMSC);
- Sent: Date and time of the message;
- Received: Date and time the message was received by the system;
- Subject: Logical name of the modem device receiving the message (GSM1 is the internal GM862-quad);
- Alphabet: is the alphabet used to encode the message;
- Text of the SMS message.

For MMS is also shown the multimedia content.
The system will continuously receive messages in background, and a counter on the main menu displays the presence of one or more unread messages.
It is possible to disable the reception of SMS (Rif. 5: How to configure the SMS engine) in order to obtain higher sending rates.
The main queue owned by users of level Operator and Viewer is named "default", if you would like to link users to different queues look to the Users Management (Rif. 4.1: Users Management). Instead, Admin users works on the queue called “history”.

## 3.2 SENT

In this page are listed all sent SMS messages.

## 3.3 OUTGOING

In this page are listed all messages on outgoing queue, during the “sending phase” but not already charged by the modem.

## 3.4 FAILED

In this page are listed all SMS messages skipped for errors after three sending attempts.

## 3.5 WRITE NEW

From here you can send new SMS messages. You just have to insert the required data filling the form:

- From: by default is the user currently logged in (note that the sender that will be seen by the receiver is just the phone number of the SIM card into the device. For custom senders, please visit www.kdev.it);
- To: is the receiver’s phone number in international format without the leading “+”. for example 39XXXXXXXXX. You can also select a contact or a list of contacts from the address book (Rif. 3.7: Address Book).
- Text: the text of the message. If autosplit is enabled (by default) you can send up to 1836 characters as concatenated SMS (Rif. 5.2: Message autosplit).
- Flash: with this feature the message appears directly on the receiver’s phone display, but it is not saved in its memory. Note that most of the phones support this feature, but not all.

## 3.6 POLLS

Polls are a simple way to obtain fast and custom statistics on the contents of incoming messages, through the specification of a list of patterns. Every time an SMS message contains one of these patterns, the counter for the poll is incremented and a graph with percentage is displayed. To add/remove pattern subjects simply click on “List poll subjects”.

## 3.7 ADDRESS BOOK

This is a list of contacts and groups useful for distribution lists. From here you can choose between:

- Add a new contact;
- Select single and multiple contacts;
- Delete a contact;
- Edit contact;
- Search.

For each entry you have:

- Name: name of the contact;
- Phone: phone number of the contact, in international format without the leading “+” (for example 39XXXXXXXXX);
- Group/Notes: useful to identify a group for multiple sends and distribution lists;
- How many times option: how many times every message will be sent to the contact (by default 1).

To add a contact to the Address Book select "Add new contact" from the menu.
To send a message to a single contact click on his name, automatically the phone number will populate the "To:" field of the send message form. You can also check a group of contacts and with “Send to all” they will be all inserted into the “To:” field, like a dynamic distribution list.

### 3.7.1 DISTRIBUTION LIST & MULTIPLE SENDINGS

For multiple sendings usually you have to launch a search on the Group/Notes field. After you have obtained the desired list, check those contacts and click on “Send to all” as said before to start SMS sending process. In

the "To:" field the tag [selected group] will be displayed to show this feature is active.
Note that on the website there are plugins to send to a CSV list instead than selecting contacts from address book. 4. SYSTEM MANAGEMENT
4.1 USER MANAGEMENT
SMS/MMS FoxBox G20 is a multi-users system with access privileges.
With “User profiles” you can configure users and grant to each one a dedicated incoming message queue.
The Admin user is a “root user”, it can perform every setting of the box and create other users. Then we have other two levels: the Operator (can handle incoming and outgoing messages but it doesn’t have setup capabilities) and the Viewer (can only view incoming messages and perform basic operations, like send messages as defined in black/white lists).
For each user the Admin could specify a different incoming queue, so new users will work on a dedicated environment without interfere with others, or link it to the default queue shared by other users. Note that only the Admin can access historical queue (where all incoming messages are stored).
User attributes are:
- Name: username for login
- Password: password for login
- Type: level of the user (Admin, Operator, Viewer)
- Queue: queue space definition.

Note that if you have defined a custom queue for a user and you delete it, you will delete also the associated database with its contents. Only the default and the historical queues cannot be deleted.
4.2 SYSTEM PROFILE
This menu gives you the full control on graphic template, language selection and on gateway "email to SMS" and "SMS to email" functions.
4.2.1 CONFIGURE SMS TO EMAIL FORWARD From here you can specify the SMTP server for SMS forwarding to a Mailbox.

Informations you have to enter are:
- Sender domain: it is the domain from where messages should be sent, for example if you mailbox is xyz@aaa.com and the domain is the text portion after the “@”, it will be aaa.com.
- SMTP server for outgoing mails: the IP or the FQDN (fully qualified domain name) of your SMTP server.
- From which address the appliance has to send: this will be the email address from where FoxBox will send messages.
- Destinations: insert the email address where the SMS message should be forwarded. If you need to send it to more than one mailbox, insert them separated by a “,”.
- Custom subject: insert the subject of the email that will be sent (for example "New SMS for you").

To enable this feature you have to remove the sharp “#” in the Eventhandler (Rif. 4.3.4: How to enable the SMS gateway).
The two choices “Activate forwarding …” have been added just to make you able to temporarily disable the forwarding in case you need it, without modifying twice the eventhandler.
4.2.2 TEMPLATE CUSTOMIZATION From here you can customize the theme of your device, change the language, or apply your logo and company name.
- Company name & logo: change the name of the device, or upload an image in .jpeg format, substituting the FoxBox logo. The image has to be sized 80x50px.
- Template: you can choose the theme of you FoxBox from the popup
- Language: select the interface language.

4.2.3 CONFIGURE INBOX FOR FORWARD EMAIL TO SMS The forwarding function from email to SMS offers you the opportunity to divert all incoming email messages of a defined mailbox to the phone number specified in the “From”, in the “Body” or in the “Subject” of the email. Fields you need to configure are:
- Specify server to poll: specify the FQDN (fully qualified domain name) or the IP address of the server where the mailbox is hosted;
- Specify protocol: select which protocol should be used (POP3 or IMAP);
- Insert username: type here the username used to log into the mailbox;
- Password: type here the password used to log into the mailbox;

If you check “Keep messages on the server”, your messages will not be deleted from the mail server when diverted.
To enable this function you have to start the “SMS Gateway” from the Control Panel (Rif. 2.1.1: SMS gateway engine).
When the configuration is finished, you can try the divert feature following this example. You would like to send the text “Test divert" to the phone number 3490001122333. Open up your favorite email client and format the message as follows:
- Fill the “To:” field with the email address defined for divert.
- In the e-mail subject type: TOsms
- In the body of the email: From: Your name To: 393490001122333

Test divert

Now send the email, and in a few seconds the message will be sent to the desired number. Please, check that the email format is configured as TEXT and not as HTML.
This feature is really useful for those who wants to give to their diagnostic systems (email based) a notification through SMS.
The configuration file for Procmail is located in /etc/.procmailrc, feel free to modify it to fit your needs.

4.3 EVENTHANDLER

The eventhandler is one of the most powerful features of SMS/MMS FoxBox G20. From here, you have full control on all the actions that the device performs while receiving or sending a message. You can assign different meanings to LEDs, disable incoming or outgoing messages, etc.
To activate/deactivate functionalities you need only to uncomment/comment the little blocks enclosed between “#” (sharp symbol) following the BASH syntax.
Take a look to the block that calls custom scripts on incoming messages, uncommenting it as shown below you will activate the custom form of the case 1. As you can see, in this if-clause the RECEIVED event is selected.
You have to keep in mind that you need to pass arguments to the script you want to run, that are:
- $1: the event identification that could be SENT, RECEIVED, FAILED or REPORT;
- $2: the full path to the SMS file handled by event in $1;
- $3: the message id of the SENT message. It is only used if you sent a message successfully with status report enabled.

Each time that an event occurs the eventhandler is invoked, and all the variables ($1, $2) are passed to this script, that will execute the action defined in the if-clauses.
Predefined eventhandler blocks :

4.3.1 CONTROL A LED FOR VISUAL ALARM

# TURN ON LED OG29 ON RECEIVED MESSAGE #if [ "$1" = "RECEIVED" ]; then # #/etc/sms/scripts/led29 #fi
# If you enable this block, for each incoming message you’ll obtain a blink of the LED OG29 (Rif. Hardware reference)
# TURN ON OG 29 ON SENT MESSAGE #if [ "$1" = "SENT" ]; then #/etc/sms/scripts/led29
#fi
# If you enable this block, for each outgoing message you’ll obtain a blink of the LED OG29 (Rif. Hardware reference).

4.3.2 HOW TO ENABLE AN APPLICATION

#Enable this to activate custom events #This is the custom script written by user for RX action #
#if [ "$1" = "RECEIVED" ]; then #/mnt/flash/root/source/custom/custom_rx "$2" #fi
#
#This is the custom script written by user for TX action #if [ "$1" = "SENT" ]; then
#/mnt/flash/root/source/custom/custom_tx "$2" #fi
This block contains the call to the scripts handled by Custom Application for incoming and outgoing messages (Rif. 4.4: Custom Application).

4.3.3 HOW TO ENABLE XML FORMAT

#Save messages in XML format #if [ "$1" = "RECEIVED" ]; then #/etc/sms/scripts/sms2xml $1 $2 $3 #fi
#
With the activation of the block all incoming messages will be exported in XML format and saved in the defined folder.

4.3.4 DEFAULT FUNCTIONS FOR INCOMING AND OUTGOING SMS

#NEVER DISABLE THE FOLLOWING SCRIPT FOR MESSAGE RECEIVING if [ "$1" = "RECEIVED" ]; then
/etc/sms/scripts/parser.php
fi
#
This block should always be active, if you disable it incoming messages will not be visible from the web interface.

#NEVER DISABLE THE FOLLOWING SCRIPT FOR MESSAGE OUTGOING if [ "$1" = "SENT" ]; then #
#/etc/sms/scripts/out.php
/etc/smsc_ctl $2 fi
#
This block should always be active, if you disable it outgoing messages will not be visible from the web interface.
#Event on failed message if [ "$1" = "FAILED" ]; then /etc/sms_fail $2 fi #
This block should always be active, if you disable it failed messages will not be visible from the web interface.

4.3.5 HOW TO ENABLE THE SMS GATEWAY

#SMS TO EMAIL #
#/etc/mailsend/smstomail "$2" "$1" #fi
#
#Event on sent message #if [ "$1" = "SENT" ]; then #/etc/mailsend/smstomail "$2" "$1" #fi
#
#Event on failed message #if [ "$1" = "FAILED" ]; then #this send the failed message to a mail address
#/etc/mailsend/smsfailmail "$2" "$1" #fi
#
This block enables the “SMS to email” forward function for incoming, outgoing and failed messages as

declared in the variable $1 (Rif. 4.2.1: How to configure the forward SMS to Email).
4.3.6 HOW TO ENABLE MYSQL MODULE
#this is the database mysql backend #if [ "$1" = "RECEIVED" ]; then #/etc/sms/scripts/mysmsd "$1" "$2" "$3" #fi
This block enables the MySQL module as described in (Rif. 4.5: MySMS Module).

4.4 CUSTOM APPLICATIONS

From this panel you can extend the FoxBox functions with your own applications.
In the two text fields you can link your program to incoming (Rif. 4.3: Eventhandler), received or sent messages.
By default the system is configured for executing a BASH script in shell #!/bin/sh. If you would like to use PHP scripting simply change the header declaration with #!/bin/php.
Obviously you can also write C or C++ applications and run it from here, for a complete guide to write applications for Fox Board look at www.acmesystems.it where the SDK and a WebCompiler are available.
4.4.1 EXAMPLE OF CONTEST VIA SMS
Now is time to proceed with a practical example, like to create a game, a little example of a lottery. We would like people send SMS messages to the number of SMS/MMS FoxBox G20 typing in the text a CODE, and then we want to answer to the winner with an SMS notification.
Analysis of the problem: To create this application we need to control the text of each incoming message. In case the message has the winning code, we need to extract the phone number of the winner and send an SMS with the notification to it.

This is a shell script that performs all this actions:
#!/bin/sh
#
#This is a sample script for custom RX action #PURPOSE: The script searches a code inside an incoming message and if the #code is matched replies with the massage "You WIN!" #
#Search the code 1223456 inside the SMS message #
#CODE that we want to search SEARCH="123456"
#
#Text message that we want to send TEXT="You WIN!" #
#
CODE=`/bin/cat $1 | grep "$SEARCH"` #
#if code is not empty reply with the message "You WIN!" if [ "$CODE" == "$SEARCH" ]; then #I need to extract the phone number to send the reply #
NUMB=`/bin/cat $1 | /bin/grep "From:" | awk '{print $2}'` #
#Now I generate the file for outgoing queue FILE=`/bin/mktemp /mnt/flash/spool/outgoing/send_XXXXXX` echo "To: $NUMB" >> $FILE echo "" >> $FILE echo "$TEXT" >> $FILE fi

To try this script, copy and paste it inside the form "Custom application applied to received items". Then send a message to the device with code "123456" and you will win!
As you can see in this example, we have created a little parser using `/bin/cat $1 | grep "$SEARCH"` that means: list the content of $1 (that is the full path to the received message) and match if it contains the pattern $SEARCH (the winner code).
Then we extract the phone number of the winner with: `/bin/cat $1 | /bin/grep "From:" | awk '{print $2}'` this means list the content of $1 search the pattern "From:" and take the number using awk {print $2} (column 2).
At the end we proceed generating the notification message. The code below will create a file with this content, the destination To: (previous extracted number) a blank line and the text of the notification.
FILE=`/bin/mktemp /mnt/flash/spool/outgoing/send_XXXXXX` echo "To: $NUMB" >> $FILE echo "" >> $FILE echo "$TEXT" >> $FILE The variable $1 contains the full PATH to the message, and what is the format of the message in this file? It is simply this one:
From: Aaa To: 390001122333 Alphabet: ISO
Text of the message
4.5. MYSQL MODULE
The FoxBox internal database is in SQLite. This engine offers very good performance and supports databases up to 2TB in size. You could say: "Really good but my system is based on MySQL!", this is not a matter with MySQL module. The main purpose of this module is to grant you the capability to automatically divert all of your messages to your favorite database.
As all other processes, also this one is controlled by the main eventhandler.
The code below is the call to the module from event handler and it is a portion of it:
.....
#this is the database mysql backend #if [ "$1" = "RECEIVED" ]; then #/etc/sms/scripts/mysmsd "$1" "$2" "$3" #fi
....

To activate/deactivate the module you have to remember to remove/add the “#” (sharp character) as

always.
The configuration is fully Web based, and you can access it by clicking on MySQL button. Below is listed all that you need to get a complete setup:
- A MySQL socket listening on the default port on your server, with permission set up to accept incoming connection from the IP of FoxBox;
- The IP/hostname of your MySQL Server;
- The username to access the table with enough permission to perform SELECT and INSERT;
- The password you set up for the user, remember to verify password style;
- The name of database where we have to perform the INSERT query.

You can choose to store messages only on MySQL or on both databases (internal SQLite and MySQL). After you finished filling up required fields choose Save Configuration to apply changes.

Note that your MySQL Database should contain a table named "messages" with the following fields times, froms, tos, subject, sent, texts. The insert will populate these fields with timestamp of when the message was received by FoxBox, the sender phone number, the receiver phone numbers, the logical name of the modem that received the message, the timestamp when message was sent and the text of the message.
The INSERT is called by a script that “parses" the SMS File for extract values and pass them as arguments at a binary file that perform the real insert. The parser is located in /etc/sms/scripts/mysmsd and the code is reported below:

DATE=`date +"%Y-%m-%d %H:%M:%S"` #Extract data from the SMS file FROM=`/etc/procmail/formail -zx From: < $2 | sed 's/"//g'` TO=`/etc/procmail/formail -zx To: < $2` SUBJECT=`/etc/procmail/formail -zx Subject: < $2` SENT=`/etc/procmail/formail -zx Sent: < $2` #Text is not used but could be used TEXT=`/etc/procmail/formail -I "" <$2` #CALL the binary /etc/sms/mysms "$DATE" "$FROM" "$TO" "$SUBJECT" "$SENT" "$TEXT"
For the SMS processing we used a Procmail utility called Formail. More info are available on their website. Pay attention, to use this module you need to activate it into the Eventhandler (Rif. 4.3.6: How to enable MySQL module).
4.6 NETWORK
From this screen you can edit TCP/IP settings of the SMS/MMS FoxBox G20.
Available fields are:
- IP address;
- Subnet mask;
- Broadcast address (for example 192.168.7.255);
- IP gateway for internet access, this should be enabled for the use of SMS forwarding and other network functions (Rif. 4.2: Configuration);
- DNS servers.

After you have saved the new configuration you have to reboot the appliance for the changes to take effect.
On the latest FoxBox version you can set the IP using the LCD screen (Ref. 6: LCD screen).
4.7 DATE & TIME
SMS handling needs that date and time are correctly set up, due to the indexing of the messages inside the database.
You can choose to set Date & Time manually or use a network time server with your local time settings.
4.8 SYSTEM & LOGS
This is a summary of your system overall status. From here you can see:
- Used RAM memory;
- Used Flash memory;
- System details;
- Handle SQLite databases using the internal manager (as PHPmyAdmin but for SQLite);
- View logs of procmail, sms engine, … (Rif. 5.1: LOG level and verbosity).

4.9 SMS FILE FORMAT
The SMS file format is a text file composed of two parts:
- The header;
- The message. This two parts are separated by a carriage return.

An easy SMS example is:
From: SMSFoxBox To: 3934947XXX Alphabet: ISO
Text of the short message
Each header line has a meaning as shown below:
GENERIC HEADERS From: sender identification, useful for logged in user identification (outgoing messages);
To: receiver phone numbers, the number should be specified in international format without the +; Flash: if you set this value to "yes", the message will appear directly on the phone display without asking for open it up (if supported by mobile phone); Alphabet: specify the character SET used in the SMS text:
- ISO LATIN ANSI: 8 Bit character set, MAX 160 Characters with autosplit (DEFAULT VALUE)
- GSM: 7 bit character set refer to GSM specification MAX 160 Characters with autosplit
- UCS: UCS2 character set MAX 70 Characters with autosplit
- BINARY: 8 bit binary data, no text (ringtones and data trasmission) SMSC: phone number of the SMSC; Report:

control if a status report is requested for the message, boolean value (yes/no). Default is NO; Autosplit: control how to split messages. Useful only for text messages, not for binary split.
RECEIVED SMS MESSAGES (Incoming) From: sender phone number From_SMSC: the SMSC that sent the message Subject: the logical name of the modem that received the message (DEFAULT GSM1)
Sent: time when message was sent Received: time when the message was received by SMS FoxBox
You can use custom header lines for your applications. If the Software finds unknown headers it will simply skip it. An example of received message is:
From: 3934947032XX From_SMSC: 39565258552585 Sent: 06-10-04 23:26:23 Received: 06-10-04 23:26:29 Subject: GSM1 Alphabet: ISO
Text of the short message
An example of outgoing message is:
From: SMSFoxBox To: 3934947XXX Alphabet: ISO
Text of the short message

5. SMS engine configuration
As shown in the chapter about the control panel, by clicking on “SMS engine” you’ll get access to the configuration panel of the core engine for incoming/outgoing SMS.
Here you can configure some priority settings:
5.1 INCOMING PRIORITY
Enables the SMS receiving capability
- 0: Disabled
- 1: Enabled
- 2: Enabled with maximum priority to incoming messages

5.2 LOG LEVEL
loglevel = <value> This gives you control to the log verbosity. The supported range is from 0 to 7. The default value is 5.
5.3 MESSAGE AUTOSPLIT
The range supported is from 0 to 3. It controls how messages longer then 160 characters are splitted:
- 0: Disabled
- 1: Enabled, no part-number
- 2: Enabled, text numbers
- 3: Enabled, concatenated format (not supported by some phones)

5.4 MODEM SLEEP
Blocktime: if the modem hags, it sleeps for the time specified (in seconds).
errorsleeptime: if an error occurred, the modem sleeps for the time specified (in seconds).

5.5 HOW TO ENABLE BLACK/WHITE LISTS
Blacklist= <PATH TO THE LIST> Whitelist= <PATH TO THE LIST>
5.6 Setup of the PIN code of the SIM
#pin = 0000 remove the sharp # and put you SIM PIN to enable the security code check (this can slow down receiving speed). 6. LCD screen (optional)

In this new FoxBox version has been added an LCD screen (dimensions: 2 rows X 16 characters), to set some basic information and perform some test without need to access the device remotely. The appearance of the screen (without custom sticks) is this one:
6.1 AVAILABLE FEATURES
In these paragraphs will be shown the available features, with a complete description of their correct usage.
6.1.1 MAIN MENU
This is the first screen displayed at startup, simply showing the list of the available functions. You can browse it using buttons L and R (or, with same results, U and D). Once you have found the submenu you need, just press the C button to enter it.
6.1.2 TAGS
In every screen you will see also two symbols displayed:
- GSM signal: placed in the top-left corner, it indicates the strength of the GSM signal measured by the FoxBox. It can show values from 1 to 4 ("Very low" -> "Low" -> "Good" -> "Very good") or the symbol "!" when the FoxBox is not able to receive it.
- SMS state: placed in the top-right corner, it indicates the situation of the SMS traffic. It can show “I” if there are some incoming message to be processed, “O” for outgoing ones and “B” for both the case. Obviously “N” means that there are no messages on the queues.

6.1.3 IP ADDRESS
Here you can change the IP address of the FoxBox (remember that you need to reboot the device after you have saved it). To define the new address, just slide between the single numbers with L and R buttons, and increment/decrement them with U and D. Once you have finished, press C. Now a confirmation prompt will be shown, just hit R to confirm or L to cancel the operation. Note that if you insert an invalid IP address an error message will be shown, and the operation automatically canceled.
6.1.4 TRY PING

This feature is really useful when for some reason FoxBox hangs, allowing you to see if it is still working and it can reach the network (for example, pinging you own pc). On the other hand, you can also check if some IP address is in use or available. The definition of the address to ping and the buttons' functionalities are the same of the menu above.

6.1.5 DISK SPACE

Here you can see the disk usage measured on the DATA partition (where are stored messages, contacts, …) as a percentage on the total size (935 MB). All the buttons here have the same behavior, bringing you back to the main menu.

6.1.6 REBOOT

From here you can reboot the device. After selecting this submenu, you will see a confirmation prompt asking if you really want to proceed with the command. Pressing R you will launch it, instead pressing L you will abort. The other buttons are undefined.

6.1.7 SHUTDOWN

Exactly the same behavior as above, but here you shut down the device.

6.2 BOOTING & STOPPING

During Booting and Stopping procedures, you will see on the screen a series of messages showing you the current executed phase. This informations are very useful if a configuration change has made the FoxBox unable to complete the boot, or just to check that every needed module has been loaded. There is no interactivity with the user, until the main menu is shown.

7. Software functions draft SMS/MMS FoxBox G20's software consists on two main contests:

- Core engine: this is the BASE system that handles all background processes, event handler and interaction between OS and the MODEM.

The core engine uses GSM 07.05 (=ETSI TS 300 585) and GSM 03.38 (=ETSI TS 100 900) specifications.

- User interface: it is completely WEB BASED, as described in the first chapter. You have to use a browser with XSL parsing capabilities. For a best use we suggest you Mozilla Firefox.